Navigation Solutions for Work Boats
THE RIGHT PRODUCTS FOR THE RIGHT JOB

For a product that works as hard as you do, look no further than the Simrad Professional Series.

Whether you are servicing rigs in the Gulf of Mexico, operating a passenger ferry in the South Pacific, or fishing in the Norwegian sea, you need our Work Boat expertise onboard.

Our products are designed to withstand the most rugged environment to give you the confidence you demand at sea. Known for their ease of use, simple installation, and state of the art, precision technology, our products won’t let you down.
Smart Systems: Work Boats

OUR EXPERTISE COVERS KEY NAVIGATION, AUTO-STEERING AND COMMUNICATION SYSTEMS INCLUDING CHART, RADAR, SOUNDER, AUTOPILOT, VHF AND SAFETY EQUIPMENT, ALL MATCHED WITH A RANGE OF NECESSARY SENSORS.

BROADBAND RADAR, STRUCTURE SCAN AND STRUCTURE MAP ARE UNIQUE TECHNOLOGIES THAT PROVIDE EXCEPTIONAL TOOLS FOR ANY MULTI-PURPOSE VESSEL.

AS LEADERS IN MULTIFUNCTION INTEGRATION, WE OFFER GENUINE PRODUCTIVITY AND EFFICIENCY GAINS BY DELIVERING DISPLAYS THAT PROVIDE A TRULY INTEGRATED WORK BOAT SOLUTION.
HSC / PASSENGER VESSELS

SENSORS

- **SIMRAD**
  - 12kW Argus Radar (6 Feet)
  - Broadband 4G™ Radar
  - GC80 Gyrocompass
  - MXX12B-10 Smart Antenna
  - MXS35A AIS System
  - HS80
  - 25kW Argus Radar (6 Feet)
  - WS80 Wind Sensor

BRIDGE

- **CS68 ECDIS (27” display)**
- **ARGUS Radar (27” display)**
- **MXS12 Navigation System**
- **HR80 Heading Repeater**
- **V800 Rate of Turn Instrument**
- **IS70 Rudder Angle Indicator**
- **IS70 Speed Instrument**

- **AP70 Autopilot**
- **QS80 Autopilot Remote Control**
- **SD80 Autopilot Interface Unit**
- **AC85 Autopilot Computer**
- **RF45X Rudder Feedback Unit**
- **AXS100 GMDSS VHF**
- **EG70 GPS EPIRB**
- **SA70 AIS-SART**

See our suggested system pages at PRO.SIMRAD-YACHTING.COM
Tug/Salvage/Dredge

**BRIDGE**

NSE12 Chartplotter / Multifunction Display
HR80 Heading Repeater
StructureScan HD Imaging Module

**SENSORS**

6kW HD Radar
Broadband 4G™ Radar
GS15 GPS Antenna
HS10 GPS Compass

**BELOW DECK**

AP70 Autopilot
ACS8 Autopilot Computer
FU80 Autopilot Remote Control

W180 Wind Indicator
IS70 Rudder Angle Indicator
IS70 Speed Instrument

RS12 VHF Radio
AX50 GMDSS VHF
NAIS-400 AIS Transponder

EG70 GPS EPIRB
SA70 AIS-SART
See our suggested system pages at PRO.SIMRAD-YACHTING.COM
Smart Solutions for IMO Work Boats

OUR HERITAGE AND EXPERTISE COVERS ALL KEY WORK BOAT NAVIGATION AND COMMUNICATION NEEDS. OUR PRODUCT RANGE SPANS RADAR, ECDIS, SOUNDER, HEADING SENSORS, GYROS AND VHF, WITH EASY NETWORKING OPTIONS INCLUDING AUTOPILOT, INSTRUMENTS AND SART/EPIRB SAFETY PRODUCTS.

OUR DEPENDABLE, ADAPTABLE AND SMART SOLUTIONS ARE DESIGNED WITH THE WORK BOAT MARKET IN MIND.

LOW MAINTENANCE GYROCOMPASSES

- Simrad gyrocompasses are the most reliable on the market, and with no liquids to change every other year like most typical gyrocompasses, they are virtually maintenance free.
- A wide range of control units provide complete flexibility of system configuration for new installation and easy retrofit into existing repeater systems.

ARGUS RADAR
MAKE YOUR VESSEL MULTI-PURPOSE

- With the optional Advanced OSID Software module installed, the Simrad ARGUS radar system provides the navigator with both the unique Oil Spill Detection software and the special Ice Navigator features.

CUSTOMISE YOUR SYSTEM

- The standard configuration always includes full ARPA, AIS and electronic, built-in Interswitching for multiple radar installations

TROUBLE FREE INSTALLATION/SERVICE

- The interface with the radar console is through a single connector and it is not necessary to open the transceiver casing during installation. Every analogue adjustment is made remotely from the ARGUS console.
- Easy installation and service. The radar cable snaps on from the outside ensuring quick, easy and trouble free installation.

More information at PRO.SIMRAD-YACHTING.COM

More information on page 16
PILOTS THAT WORK AS HARD AS YOU DO

- The Simrad AP70 and AP80 feature a unique WORK Mode.
- Customise the parameters to suit the individual needs of the vessel such as fully laden load, vessel towing mode, light ship configuration etc.

AP70/80 - MODULAR AND FLEXIBLE AUTOSTEERING SOLUTIONS

- 2 basic systems using the same modules: design and build a system to your unique requirements. Configure a system to meet the requirements for a Type Approved autopilot.
- Designed for professionals - Can Bus networking, triple support of independent rudders and multiple thrusters, and simple networking via the SimNet protocol. Data sharing and system control is much easier and flexible.

More information on page 14 - 15

IMO GPS

- The MX Series offers a full range of Type Approved approved GPS navigation products including D/GPS display units, antennas, AIS and GPS heading sensors. With over twenty years of development behind them, these products are made with the needs of today’s professional mariners in mind.

More information on page 19

ONE OF THE MOST RELIABLE ECDIS IN THE WORLD

- We are one of the few ECDIS suppliers that offers an approved system that runs on 24VDC. This makes CS68 ideally suited for smaller vessels under 10,000 tons. Quick access to the most important functions makes CS68 the easiest ECDIS to operate on the market.
- Combines both monitoring and planning modes – all safety functions are continuously monitored even when route planning.
- Includes a unique voice alarm system which makes it possible to separate ECDIS alarms from other bridge alarms.
- An anti-grounding feature, detecting obstacles on the chart, may be set to meet user requirements.
Non-IMO Work Boat Solutions

Innovative and industry unique, plug & play performance modules.

STRUCTURESCAN™
Revolutionary StructureScan creates the ultimate in reality EchoSounding. StructureScan provides wide coverage in high detail with SideScan and Downscan™ Imaging, providing picture perfect images of structures directly below the vessel for a true 180° view.

StructureScan high-speed ethernet networking allows more than one compatible Simrad display to share one StructureScan transducer that can be viewed on all NSO and NSE units; plug-and-play ethernet allows for quick, clean installation.

ENGINE MANAGEMENT
Integrate real time gasoline or diesel fuel flow monitoring together with fuel tank information, for extended mission range and eco friendlier operations. A wide range of sensors available.

NSE EXPERT
Easy-to-use, bright visible displays with uncluttered presentation. The Simrad NSE 8 & 12 inch multifunction displays provide professional level performance with sophisticated charting, radar and echo sounder integration. With powerful networking and vessel integration capabilities, NSE provides comfort and control at sea.

STRUCTURESCAN™

HIGH SPEED GPS
The impressive 16-channel NMEA 2000 GPS antenna provides superior sensitivity for signal acquisition, with incredible position accuracy, in a compact size that is easily flush mounted. This advanced positioning antenna is compatible with both NSO and NSE.

CAMERA INPUTS
Video input for night vision and multi purpose cameras. Connect up to two cameras per Simrad NSE, or connect up to three cameras to the MO15-L monitor as part of the NSO system.

BROADBAND SOUNDER MODULES
Simrad Broadband Sounder Modules (BSM) deliver incredible echo clarity and the highest underwater definition ever achieved. Choose BSM-1 or BSM-2 for Best In Class performance.
**NSO OFFSHORE**

With sleek and stylish yet rugged 10, 15 & 19 inch displays the NSO Offshore line is versatile and easy to expand. Based on the Simrad NSE platform, the NSO delivers ‘best in class’ charting, sounder, and radar performance as well as unique control and integration options.

**DIGITAL SWITCHING**

Breaking new ground with support for CZone digital switching from BEP Marine. CZone digital switching offers a new paradigm for cost effective, control and monitoring of nearly any system on the vessel. The Simrad MFD’s can operate as a CZone controller. Control lights, turn on bilge pumps, monitor tank levels – all from the NSO or NSE navigation system. Simrad and CZone – a partnership in Innovation.

Find out more: [www.bepmarine.com](http://www.bepmarine.com)

**AUTOPILOT**

The world’s best performing autopilot system integrates with NSO and NSE. Engineered to benefit both “space-challenged” dash layouts and multi-station expanded systems like flybridge vessels, NSO or NSE autopilot integration offers tremendous flexibility. Control your autopilot like never before the primary display.

**AIS**

Integrate an NSO or NSE system with Simrad AIS Systems to see and be seen. Overlay AIS-equipped vessel information on chart and radar displays for exceptional situational awareness.

**BROADBAND RADAR**

A revolution in radar unlike anything else on the marine market, the Broadband Radar utilises solid-state technology and provides superior target detection and separation at closer ranges, ease of operation and a new level of navigational performance.

**HD DIGITAL RADAR**

Simrad offers a range of radome and open array digital signal processing radar systems, working with power levels from 4 kW to 10 kW via high capacity Ethernet. These radars ensure exceptional detection of small or distant targets, virtually eliminating screen clutter allowing a clear and accurate image.
ARGUS Radar

STATE OF THE ART X - BAND RADAR
The Simrad ARGUS radar is a new series of improved X-band radars which provide Work Boats with even better detection capability. The new configuration is characterized by reduced weight, small dimensions, and easy installation and configuration, thereby offering the best solution for installation even on a variety of Work Boats.

CONFIGURE ARGUS RADAR INTO THE IDEAL SYSTEM FOR YOUR VESSEL
The Simrad ARGUS radars fully complies and exceeds IMO regulations. Thanks to the modular design, they can be either assembled to form a stand-alone display cabinet or be flush mounted into a mechanical bridge console.

The standard configuration always includes full ARPA, AIS and an electronic built-in Interswitch for dual radar installations. The Argus display is produced in three different configurations.

TROUBLE FREE INSTALLATION
The interface with the radar console is through a single connector and it is not necessary to open the transceiver casing during installation. Every analogue adjustment is made remotely from the ARGUS console. The radar cable also snaps on from the outside ensuring quick, easy and trouble free installation.

INTEGRATE WITH BROADBAND 4G™ FOR THE ULTIMATE RADAR SOLUTION
Tighten the blind zones - the Broadband Radar* component provides complete close range coverage within the pulse radar's blind spot. Targets can be monitored and detected within a 5m range ensuring that all potential threats are monitored.

Docking radar - with the Broadband Radar’s* close range performance, the navigator or pilot can monitor the vessel relative to the dock, oil rig or other structure, right up to the point of contact. Total flexibility of installation is available due to zero radiation hazard enabling scanner location that is not possible with pulse radars’ inherent radiation.

* Broadband Radar integration dependent on local type approval

ARGUS KEY FEATURES:
- State of the art professional X-band radar
- Available in 12 and 25 kW versions
- Approved for IMO vessels
- Separate processor, monitor and operation panel
- 100 target ARPA feature as standard
- Wide screen colour monitor option
- Superior signal processing
- Significantly larger target presentation area
- Seamless use of up to four antennas
- Optional advanced Oil Spill and Ice Detection (OSID) software

Wide screen – add up to 3 cameras per monitor

More information on page 20
ON-BOARD WITH SIMRAD ARGUS
Multifunction vessels operating in the offshore environment need to be ready to mount an emergency response should an oil spill occur. Having dedicated equipment permanently installed avoids the delay in waiting for a specialised vessel and accelerates the response and clean-up time.

The Simrad ARGUS Oil Spill detection system is a simple add-on to the standard type-approved IMO / SOLAS navigation radar providing an elegant solution for any Multipurpose, OSV or specialized Work Boat.

The Simrad ARGUS Oil Spill Detection radar operates on the same hardware (non PC based) approved by the Federal Maritime and Hydrographic Agency in Germany (BSH) and is compliant with the European Maritime directive (MED) and the United States Coast Guard regulations.

We are among the first companies in the world to provide an oil detection application working in parallel with its IMO/SOLAS ARPA navigation radar. Ships in regular operation can use the primary radar set as a traditional instrument for navigation and the secondary radar display (interfaced to the primary radar) switched over to the advanced function of Oil Spill Detection. From the ship owner’s point of view, the most important benefit is the reduced maintenance costs in terms of installation, service and spare parts.

LOOKING INSIDE THE OIL SLICK
The Simrad Argus Oil Spill Detection application works by receiving and processing signals in real-time from on-board transceivers. The water surface is usually dampened when it is contaminated by oil, so the backscatter of microwave radiation from these waves is unlike the rest of the sea. The radar is then able to highlight the dampening of the reflected microwave radiation on the radar display, thus calculating the size, position and drift (speed and course) of the oil spill. We let you see inside the oil spill!

OIL SPILL DETECTION FEATURES
- Ability to present oil concentration/thickness inside the oil slick pattern
- Automatic oil spot contour detection and area size calculation
- Assessment of the oil slick position, speed and direction
- Data recording of the operating history and instant screen dumps
- Instrumental maximum oil spill detection range up to 12 Nm
- Real-time processed images with selectable integration time between 30 seconds up to 2 minutes
- Information display about wind conditions
- Ability to increase the antenna rotation speed up to 44 revolutions per minute
- Possibility to integrate external sensors and devices
- Capacity to interface and receive signals from two radar sensors and allows the operator to select the transceiver to be used for Oil Spill Detection
- Option to add an additional two radar sensors dedicated for oil spill
- Full master/slave interwithschability with two navigational radar plants
- Superb video processing with 256 multicolour video levels providing sharp colour distinctions on screen
- System also provides special features such as Ice Detection and Navigation mode, Small Target Detection mode and Meteorology mode for storm tracking

More information at PRO.SIMRAD-YACHTING.COM
Simrad AP70 and AP80 Autopilot Systems

The Simrad AP70 and AP80 are the culmination of over 60 years of experience in the autosteering market. Simrad built the world’s first autopilot in 1951 (the AP1) and we now bring you the next generation in autopilot systems. The AP70 and AP80 are state of the art type approved* autopilot systems providing complete heading and course control for a wide range of vessels.

AP70 OVERVIEW

The AP70 is a state of the art type approved autopilot*. It can be used as a standalone autopilot control unit, or is perfect as a second station in an AP80 system.

With its completely new and unique colour user interface and intuitive graphics, ability to store up to 3 individual scenario profiles, and self-learning software, this modular system makes installation and operation so easy. You won’t find another pilot on the market that boasts the same performance, durability and versatility without the high cost.

AP80 OVERVIEW

With 6 individual scenario profiles, networking with NMEA2000 cabling, a special work mode, and triple support of independent rudders and multiple thrusters, the Simrad AP80 is a one stop shop for vessels from 20 feet to supertankers.

The AP80 offers one of the smartest autopilot solutions on the market today. It will adapt to your individual load characteristics and wind and wave conditions to help lower operating costs and reduce risk. The USB plug in the front makes loading and storing these settings so simple. Like the AP70, the slightly larger AP80 is totally modular in nature, so installation and operation are effortless. Both control units share common autopilot computers and accessories making them the most flexible autopilot systems available.

Both the AP70 and AP80 systems are made from ruggedized aluminium, have a 5-inch bonded high sunlight viewable screen, and can be panel (flush) or bracket mounted.

Like all our products, the AP70 and AP80 autopilot systems are backed by a full two-year warranty. Our products are supported by our dedicated service engineers located in over 50 ports worldwide.

The products are also HCS, HSC, Wheelmark, US Coastguard, and CCS approved depending on autopilot computer.

AP70/80 KEY FEATURES

- 5 inch colour bonded display
- Fully adaptive, self-learning software
- Total of 6 user modes available
- Unique WORK mode: customize the parameters to suit individual vessel needs
- Triple support of independent rudders and multiple thrusters
- 2 basic systems using the same modules: design and build to your unique requirements
- Full 2 year warranty backed by our global service network

*products are HCS, HSC, Track, Wheelmark, US Coastguard, and CCS approved depending on autopilot computer.
SYSTEM COMPONENTS:

AUTOPILOT COMPUTERS

The Simrad AP70 and AP80 bring with them a range of 7 new autopilot computers. Their main job is to receive events from the various control units and remotes on SimNet, transmit the chosen mode back to the control units, and steer the vessel according to the current mode.

As well as our typical computer and interface units that will suit most standard installations, we offer the customizable AC85 computer that can be configured with up to four PCB’s depending on the installation requirements.

REMOTE CONTROLS

The AP70 and AP80 integrate with 3 different full function remotes: Follow-Up Control (a manoeuvre controller), Non Follow-Up Control (a drive controller), and the Quick Stick™ (Quick Stick controller).

- 35mm x 25mm (approximately 1-inch) displays
- Type approved
- Desktop or panel (flush) mounted options
- Backward compatible with Simrad’s AP24, AP28, NSS, NSE, and NSO

The FU80 (manoeuvre controller) is a Follow Up remote which means that the rudder, when hand steering, moves to the commanded angle set by turning the knob to port or starboard.

The NF80 (drive controller) is a Non Follow Up remote which means that the rudder, when hand steering, moves as long as the steering lever is kept at maximum port/starboard position. It can also be used for course change when autosteering. The lever has spring return to mid-position.

The QS80 (Quick Stick controller) operates the same way as NF80 when the joystick is kept to port or starboard. When the joystick is moved forward and released, the autopilot goes into automatic mode. When the joystick is moved backwards when automatic steering is active, the autopilot goes to standby. If the joystick is moved backwards when standby, the rudder moves to mid-position. The joystick has spring return to center position.

AP80, ADVANCED SYSTEM EXAMPLE - WORKBOAT, OSV, SHORT SEA
Heading Sensors

GYROCOMPASSES
Simrad gyrocompasses are the most reliable gyrocompasses on the market and with no liquids to change every other year like most other gyrocompasses, they are virtually maintenance free. A wide range of control units provide complete flexibility of system configuration for new installation, and easy retrofit into existing repeater systems. The standard range of interfaces can easily be expanded to provide signals for all vessel applications. The distribution of power and heading signals from the control units enables practical installation and easy retrofit. The unique technology in the GC85 and GC80 gyrocompasses eliminates “practically” the need for annual service. The GC85 and GC80 are fully IMO approved for standard and High Speed Craft (GC85) and can be configured in a dual gyrocompass system. The highest possible accuracy and stability is provided from new technology, by a sophisticated and fully sealed sensitive element.

HS70 GPS COMPASS
The Simrad HS70 brings a series of new features to a traditional heading sensor including rate of turn, heave, pitch and roll output (pitch and roll only on NMEA2000). The HS70 uses SBAS (WAAS, EGNOS, MSAS, etc.) for differential GPS positioning providing a low cost, yet highly effective heading and position based smart antenna. The rugged and low profile enclosure provides two multipath-resistant antennas for accuracy, portability and simple installation. The maintenance free smart antenna, measuring only 40cm/16”, mounts easily to a flat surface or pole.

HS80 TYPE APPROVED GPS COMPASS
The HS80 GPS Compass is Type Approved to the latest IMO regulations including RAIM (Receiver Autonomous Integrity Monitoring). Like the MX575C, it is designed to provide a true reliable heading, ROT, and position information to MX CDUs and the MXS35A “Class A” AIS transponder system. It delivers heading accuracy of better than 0.5° and sub-meter GPS positioning accuracy using RTCM correction data supplied from SBAS.

MX575C TYPE APPROVED DGPS COMPASS
The MX575C is a Type Approved D/GPS compass that is designed to provide the Simrad Professional Autopilots with reliable heading and position information. The MX575C delivers a heading accuracy of better than 0.5° at update rates of up to 10 Hz. It also provides sub-meter DGPS positioning accuracy at rates of up to 5 Hz when using RTCM correction data supplied from internal beacon demodulator.
Simrad IS70/IS80 Instruments

The Simrad IS70 and IS80 range are a family of large format marine instruments designed for coastal commercial and professional users. These units are engineered for rugged dependability and consistent performance over many hours of continuous use.

THE IS80 SERIES CONSISTS OF SIX 6.8” ANALOGUE DISPLAYS

WS80 ULTRASONIC WIND SENSOR & IS80 WIND INDICATOR

Wi80 with built in 360deg wind gust indicator, displays Wind information in Relative, Geographical and True direction. Wind speed in knots, m/s, km/s, mph or Beaufort.

The WS80 uses a very innovative ultrasonic measuring principle with no moving parts gives accurate and reliable performance without any wear-out problems and without the requirement of regular service. The WS80 has four built-in heating elements to prevent snow and ice from building up, and is well-suited to all vessel types.

HR80 HEADING REPEATER

A large format, multi-mode heading repeater for the professional user that displays the vessel’s heading via both analogue and digital displays for maximum clarity.

THE IS70 SERIES INCLUDES FOUR 4.5” ANALOGUE INSTRUMENTS
Professional IMO GPS

The Simrad MX Series offers IMO approved GPS navigation products including GPS display units, antennas, AIS and GPS heading sensors. These products are designed with the needs of today’s professional mariners in mind and have over twenty years of development behind them.

MX510 & 512 NAVIGATION SYSTEMS

The MX510 and MX512 are versatile navigation systems that offer extraordinary capabilities, with a multi-port interface that can be connected to ECDIS, ARPA, Gyro and other navigation information systems.

Optional software updates can be made through the USB port. The MX510 and MX512 with the MX521A or MX525A D/GPS are type-approved marine navigation systems. They are backward compatible with MX421 D/GPS antenna, and are also compatible with MX575B D/GPS Compass.

**MX510/MX512 KEY FEATURES:**

- IMO Type-Approved with RAIM enabled
- Choice to save and restore waypoints, routes and configuration settings
- Multiple navigation data management options using LAN, USB or NMEA serial ports. Convenient navigation equipment interface using LAN or NMEA ports
- High speed LAN interface for master/slave operation (with integrity monitoring) and up to 4 slave displays
- 9 independent serial data ports and one VGA port (MX512 only)

**MXS21A/MX421-B SMART ANTENNAS**

The IMO approved MX421-B and MX521A smart antennas deliver position accuracy better than 1 meter in DGPS mode when using RTCM correction data. They also provide better than 3 meter accuracy in standard GPS mode.

The MX521A can be configured to use several space based augmentations systems (SBAS) such as EGNOS, WAAS and MSAS in areas outside of DGPS beacon coverage.

**MXS21A/MX421-B KEY FEATURES:**

- Better than 1m (RMS) DGPS position accuracy and better than 3m (RMS) GPS accuracy
- NMEA 0183 version 3.0 interface
- IMO type approved (as part of an MX display system) including RAIM (Receiver Autonomous Integrity Monitoring)
- Designed for easy upgrade of existing MX420 installations to latest IMO standards
- Compatible with existing MGL-3 & 4 combined antenna and coaxial cable
- Integrated DGPS system including beacon and SBAS (WAAS/EGNOS)

MX525A DGPS SENSOR WITH MXB5 DGPS ANTENNA

The MX525A is a precision DGPS positioning solution in a black box. It features built-in RAIM and Space Based Augmentation Systems (SBAS) and is compliant to the latest IMO standards.

The MXB5 forms an IMO approved DGPS solution when matched with the MX525A DGPS sensor and an MX510 or MX512 display unit.

**MXS25A/MXB5 KEY FEATURES:**

- Better than 1m (RMS) DGPS position accuracy and better than 5m (RMS) GPS accuracy
- NMEA 0183 version 3.0 interface
- IMO type approved (as part of an MX display system) including RAIM (Receiver Autonomous Integrity Monitoring)
- Designed for easy upgrade of existing MX420 installations to latest IMO standards
- Compatible with existing MGL-3 & 4 combined antenna and coaxial cable
- Integrated DGPS system including beacon and SBAS (WAAS/EGNOS)
ECDIS

We are one of the few ECDIS suppliers that offers an approved ECDIS system that runs on 24VDC. This makes the Simrad CS68 ideally suited for smaller vessels under 10,000 tons, with quick access to the most important functions. We have also developed a unique voice alarm system which makes it possible to separate ECDIS alarms from other bridge alarms. The Simrad CS68 ECDIS is approved by DNV for use on all SOLAS ships and other vessels that must carry an ECDIS system.

OPERATIONAL MODES

The Simrad CS60 series ECDIS systems have the unique capability of combining both a monitoring and a planning mode. All safety functions are continuously monitored even when route planning.

MONITOR MODE

In monitoring mode, the position of the vessel is displayed in real time on the chart. The ship’s outline and size is displayed with actual vessel heading, a COG and SOG vector and actual track. The vessel can be displayed in relative or true motion. In monitoring mode, the CS68 can display the vessel in North up and Heading up simultaneously.

HIGH PERFORMANCE MARINE COMPUTERS

Our marine computers are purpose-made to serve the demands of the professional marine industry, unlike most other manufacturers, which use off-the-shelf PCs. We believe that a vessel’s primary navigation system deserves better. The computers are type approved according to IEC 60945 and the chart systems carry a 2 year warranty. All systems come standard with a total system recovery feature, so in a case of breakdown the system can be restored to its previous state after repairs have been performed.

CS68 ECDIS KEY FEATURES:

- Hardware and software are type approved according to the IMO and the Marine Equipment Directive (Wheelmark) United States Coast Guard USCG approval pending.
- ENC/S57, S63 and C-map SENC CM93/3 support
- Chart update online or through CD/DVD/USB flash drive.
- Dynamic chart licensing.
- Radar overlay option
- AIS Class-A and Class-B support. AIS filter and two way communication
- Double trip counter
- Simrad Backup Manager
- Relay interface to ship’s main alarm centre.
- Dual monitor output (per computer)
- 19", 20.1", 23" or 26" wide approved ECDIS displays

ARPA RADAR INTERFACE

By activating the interface to an ARPA radar, moving targets and operator selected “fixed points” can be displayed. Other vessels are then shown in real time on the chart, colour coded depending on possibility for collision.

PLANNING MODE

Planning a route and the defining of a waypoint is very simple using either a trackball or numeric keyboard. A pan function enables the operator to move around in the chart. To view any position in the world, the “Pan To” function can be used for viewing the chart in a specific position in Latitude, Longitude or around the vessel’s own position or a way point. Planned routes can be stored and recalled whenever necessary.

Several display colour pallets are available, night pallet with filled light sectors shown here.

Reliable, up to date tide tables.

CS68 ECDIS (23-inch display)
REINVENTING RADAR

Forget everything you thought you knew about radar, the Broadband 4G™ Radar reinvents the standard, transforming the way you’ll navigate for good. Beam sharpening, target separation control, dual range radar and high revolution speed. No other radar comes close. Now you can monitor a buoy 200 feet away and keep track of coastal projections at 32 nautical miles — all from one single dome at the same time, for the ultimate in navigational safety.

ACHIEVE AMAZING TARGET DEFINITION WITH SIMRAD BROADBAND RADAR™

This level of target detection and separation is only possible at this range because the broadband radar has no “main bang” that a conventional radar suffers from. The main bang covers up any close targets, reducing the effectiveness of the pulse radar at short range. The broadband radar can clearly show targets right on the bow of a vessel -performance that is exclusive to the Broadband Radar. The Broadband 4G Radar is fantastic for tight manoeuvres in docking situations or in conditions of limited visibility.

RANGE DISCRIMINATION PERFORMANCE

The range discrimination is a measure of the radar’s ability to distinguish closely spaced targets on the sample bearing. FMCW technology provides unsurpassed performance for maximum safety and precise navigation. At 16nm and less the Broadband Radar has from 1X to 5X more range discrimination ability to see those smaller targets than conventional small dome pulse radars.

4G™ KEY FEATURES

▸ Beam Sharpening
Broadband 4G™ Radar is the only dome radar in the world to employ beam sharpening. This allows the user to control the beam angle and the level of target separation, so the sharpest images possible are achieved.

▸ More Range
True range has been improved by 50% over the previous generation of Broadband Radar. See crystal clear targets up to 32nm away and inside strong storm cells more than 17nm away.

▸ Dual Range
Capable of displaying Dual Range radar combination when combined with an NSE or NSO system. Monitor targets at 10 meters and up-to 32nm simultaneously using just a single dome.

▸ High Speed Mode
Select 48 RPM for almost instant updating at less than 1nm.

STANDARD FEATURES

▸ MARPA Target Tracking
Track up to 10 targets as standard or up to 20 in Dual Range mode with independent control.

▸ Quick Installation
No reason to open the dome, no tune or zero mile adjustment, and no radar-licensed technician required.

▸ Dual Guard Zones
Protect yourself from more angles.

▸ Extremely Low Emissions
Safer than any other radar currently on the market and emitting less radiation than a mobile phone allowing it to be mounted anywhere.

▸ True Motion Display
Easily distinguish moving targets from land with NSE and NSO.

▸ InstantOn™
Solid-state technology produces an immediate, accurate on-screen image unlike normal warm-up times associated with magnetron pulse radars.

▸ Low Power Consumption
Ideal for vessels with special power requirements and/or long cable runs

▸ Automatic Clarity
Proven auto harbour and offshore modes including directional clutter rejection.
NSE and NSO Multifunction Displays

Operate on the same network and use the same control interface. Mix and match displays to accommodate nearly any helm requirement. Select the display that fits, then build your system with Simrad Performance Modules. It’s that simple.

NSO OFFSHORE

For work boats that value the versatility of big screen, multifunction displays and flexible networking for state-of-the-art navigation. The primary Simrad NSO15 package consists of the powerful NSO processor, a MO15 15” monitor, the OP40 wired remote and a dash-mounted SD card reader and provides a premium chart plotter with embedded regional cartography straight out of the box. From there the user can choose from an extensive range of performance black box modules designed to connect to control and display units to create an integrated navigation system to suit their needs, all controlled and monitored from the Simrad NSO via fully-customisable displays. Modules and screens can be added or upgraded at any time.

NSE EXPERT

Simrad NSE unites professional grade construction with powerful networking and integration capabilities. Available in both 8 and 12 inch sizes, this multifunction display is the most capable out-of-the-box navigation system you’ll find. NMEA 2000® networking capability and plug-and-play expansion options ensure best-in-class charting, radar and echosounding, making the NSE ideal for work boats.

NSE and NSO Key Features

**COMMON FEATURES:**
- "Masterless" system - any networked unit can operate independently
- Incorporate two scanners for dual radar functionality
- Superfast load and re-draw times
- Heavy duty aluminium case and waterproof connections for professional use
- Full autopilot integration with Simrad autopilots
- Rotary controller for flexible and precise adjustments

**NSE FEATURES:**
- Operate up to 3 screens from a single processor
- Chose from 3 screen sizes (15”, 17”, 19”), or add an extra large third party display
- Each processor supplied with embedded regional cartography (Navionics Coastal Cartography for EMEA/ APAC and InsightHD for the US.)
- Dash-mounted SD card reader supports Navionics Platinum Plus and TurboView allows system-wide cartography networking

**COMPARISON TABLE**

<table>
<thead>
<tr>
<th>System Description</th>
<th>System Description</th>
<th>Display Size</th>
<th>Screen Brightness</th>
<th>Networking Capability</th>
<th>Video Integration</th>
<th>Radar Options</th>
<th>Radar Features</th>
<th>Echosounder Options</th>
<th>Structurescan® Compatible</th>
<th>CZone Smart Boat Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSE Expert</td>
<td>High Performance, Multifunction Display</td>
<td>18” / 12”</td>
<td>1500 cd/m2</td>
<td>6 Units</td>
<td>2 x Input</td>
<td>All</td>
<td>Advanced 4G Features</td>
<td>BSM-1, BSM-2</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>NSO Offshore</td>
<td>Blackbox, Glass Bridge System with Remote Keypad</td>
<td>19” / 17” / 19”</td>
<td>600 -1500 cd/m2</td>
<td>4 Units</td>
<td>MO-L Monitor Multiple Input</td>
<td>All</td>
<td>Advanced 4G Features</td>
<td>BSM-1, BSM-2</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

More information at PRO.SIMRAD-YACHTING.COM
SA70 SEARCH AND RESCUE TRANSPONDERS (SARTS)

Designed for use in search and rescue operations, Simrad’s SA70 and SA70 AIS-SART will pinpoint the location of a vessel in distress and give the exact location to nearby ships, SAR vessels and aircrafts.

Simrad’s SA70 AIS-SART gives the exact location of the distress with GPS precision and position updates every minute. Searching ships or helicopters will receive the position data in an AIS message.

Simrad’s SA70 9GHz search and rescue radar transponder gives the location of the distress on an X-band radar display. When the SART is interrogated (hit) by a radar signal, it will immediately start to transmit and be detected on the radar screens of nearby vessels.

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EG70 & EP70 EMERGENCY POSITION INDICATING RADIO BEACONS (EPIRBS)

The new Simrad EG70 and EP70 range of Emergency Position Indicating Radio Beacons (EPIRB) are designed to be used as a primary alarm for vessels in distress, and when activated transmit the ID of the ship in distress. The unique high-intensity LED built in to the top of the antenna ensures optimal visibility in the toughest conditions.

Their small and compact, totally sealed, and tamper proof design make these models the ultimate solution to meet the growing demand for smaller size EPIRB’s. The Simrad EG70 and EP70 meet IMO SOLAS requirements and can be offered with the latest GPS-technology as an option, and with float-free or manual release options.

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SA70/SA70-AIS KEY FEATURES:

- Easy mounting options: bulkhead bracket on board vessel, pole or bracket mount in a lifeboat or life raft providing flexible installation options
- Equipped with an LED and a built in buzzer to indicate operation for peace of mind
- Non-hazardous battery which can be replaced on board - no transport restrictions
- Easy to release and activate in an emergency situation - easy to operate under stress/in freezing conditions
- Light weight and compact design - one of the smallest on the market
- Mandatory carriage equipment for all ships of 300 gross tonnage and upwards
- IMO/SOLAS/GMDSS compliant
- IMO/MED/FCC approved
- 5 year warranty - global service network to assist wherever you are in the world

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EP70/EG70 KEY FEATURES

- Unique high-intensity LED light mounted at the top of the antenna
- Designed to float higher in the water than any other EPIRB in its class, providing faster and more reliable contact to SAR centers
- Tamper proof - always ready to go
- Non-dangerous goods batteries- no transport restrictions
- 48 hour operating life at -20 ºC once activated
- GPS/non GPS versions available
- Manual or float-free bracket - a model to suit all vessel types and needs
- 5 year warranty - global service network to assist wherever you are in the world
Global professional service for is provided by a network of qualified Master Distributors and Certified Partners. Dedicated support engineers are located in key ports in over 50 countries worldwide ready to provide spare parts and OnBoard service to ensure prompt and efficient service.

Additionally, Navico’s own technical support team operates from three regional locations (EMEA, Americas and Asia Pacific) providing coordination and technical support for customers no matter where they are.

Go to PRO.SIMRAD-YACHTING.COM to find your nearest service agent.
OUR HERITAGE: ESTABLISHED IN 1947.

With more than 60 years of maritime expertise invested in delivering solutions to the professional market, we have unique knowledge to support professional customers with cost effective navigation solutions.

Contact us:

Navico Americas:  Tel: +1 832 377 9578  Email: sales.americas@navico.com
Navico Asia Pacific:  Tel: +64 9 925 4500  Email: sales.apacnz@navico.com
Navico EMEA:  Tel: +44 1794 510010  Email: sales.emea@navico.com